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# NASA Procedural Requirements

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(NASA Only)

**Subject: Management of Government Quality Assurance  
Functions for NASA Contracts (w/change 1, dated 8/9/2010)**

**Responsible Office: Office of Safety and Mission Assurance**

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## CHAPTER 2. Government Contract Quality Assurance Requirements

### 2.1 Low-Risk Items

2.1.1 Program/project managers shall identify low-risk item acquisitions in accordance with the criteria specified in paragraph 2.1.3 below ([Requirement 43074](#)).

2.1.2 Government contract quality assurance for acquisitions involving the supply of low-risk items shall be performed in accordance with ([Requirement 43075](#)):

- a. FAR Part 46 and NFS Part 1846.
- b. Procurement quality assurance requirements provided in the procuring organization's quality standard (e.g., AS9100 or ISO 9001 Section 7.4.3, Verification of Purchased Product).
- c. Government Mandatory Inspection Point (GMIP) requirements per Chapter 8 of this NPR.
- d. Final product acceptance requirements per paragraph 2.8 of this chapter.

2.1.3 Low-risk acquisitions involve the supply of products or performance of services where the product/service is noncomplex, or where the product/service is complex and where the following conditions apply:

- a. The product/service is non-critical.

- b. There is a satisfactory likelihood of product success. Determination of likelihood considers factors such as product/program maturity and past performance.
- c. The consequences associated with product failure are determined to be acceptable. Assessment of consequences considers the following:
  - (1) Personnel safety.
  - (2) Product cost.
  - (3) Product criticality and importance to mission.
  - (4) Mission importance (e.g., significance to national interests or NASA strategic plan).
  - (5) Project categorization per NPR 7120.5.

## 2.2 High-Risk Items

### 2.2.1 Program/project managers shall identify high-risk item acquisitions ([Requirement 43090 2.2.1\(1\)](#))

High-risk items are products/services that are complex and do not meet the criteria specified in paragraph 2.1.3 above.

2.2.2 Government contract quality assurance functions for acquisitions involving the supply of high-risk items are identified in paragraphs 2.3-2.8 below. Government contract quality assurance functions, with the exception of paragraph 2.8, Final Product Acceptance, may be performed by a NASA Center, delegated agency, or support contractor personnel as determined by the program/project manager.

## 2.3 Document Review

2.3.1.1 Document review shall be performed on a periodic basis and whenever document changes are made that affect quality system processes or product attributes ([Requirement 43095](#)).

2.3.1.2 Selection of documents for review shall be based on the criticality, complexity, cost and importance of the product or process that is documented, and past product/process performance ([Requirement 43096](#)).

2.3.2 Document review may be conducted as a separate process from, or in conjunction with, quality system audits.

## 2.4 Product Assurance

2.4.1 Contractor hardware products shall be assured by product examination, process evaluation, and record review as follows:

2.4.1.1 Product Examination: Supplier products shall be physically inspected, measured, and/or tested to ensure conformity to contract requirements ([Requirement 43100](#)).

2.4.1.2 Process Witnessing: Supplier work processes shall be personally witnessed to ensure compliance with prescribed work instructions and contract requirements ([Requirement 43101](#)). Work processes include processes related to manufacturing,

fabrication, assembly, integration, repair, maintenance, refurbishment, test, and inspection.

2.4.1.3 Record Review: Recorded evidence demonstrating conformance to contract requirements shall be reviewed to ensure product and process conformance to contract requirements ([Requirement 43103 2.4.1.2\(1\)](#)). Recorded data, including contractually required data deliverables (e.g., Safety Data Package, Structural Analysis and Reliability Predictions), may document work performance, product attributes, product configuration, product performance, or quality assurance actions performed by the contractor (inspections, tests, measurements).

2.4.2 The selection of product assurance actions and the sample size/frequency of attribute selection shall be based on the following risk factors: 1) the criticality, complexity, cost, and importance of product supplied, 2) the complexity and maturity of the process performed, 3) personnel safety considerations, and 4) the supplier's past quality performance related to the product supplied or process performed ([Requirement 43105](#)).

2.4.3 Government product assurance actions performed on a mandatory basis are referred to as GMIPs. GMIP requirements are provided in Chapter 8 of this NPR.

2.4.4 Product assurance attributes shall be pre-identified on checklists or by other documented methodology ([Requirement 43107](#)).

2.4.5 Accomplishment of product assurance actions shall be attested to by signature, legible printed name, and date or by an inspection control system such as inspection stamps or electronic medium ([Requirement 43108 2.4.5\(1\)](#)).

*Note: For the purposes of this NPR, inspection pliers are considered to be a form of inspection stamp.*

2.4.5.1 Signatures, stamps, and data entries shall identify the discrete item examined (including any unique product identification/traceability information), process witnessed, or record verified ([Requirement 43110 2.4.5.1\(1\)](#)). Such documentation may be accomplished utilizing the contractor's approved electronic system for indicating inspection status or by the application of a signature or stamp to prerecorded planning documents or records (e.g., material test data) which contain this information.

2.4.5.2 Where stamps or an electronic medium is used, the inspection control system shall:

- a. Indicate the date of acceptance ([Requirement 43113](#)).
- b. Ensure the legibility and durability of stamp impressions and ensure that stamps do not interlock with other stamps ([Requirement 43114](#)).
- c. Ensure that only properly authorized and qualified persons are permitted to apply stamps or make data entries and that individuals who are authorized to use stamps maintain control of their assigned stamp at all times ([Requirement 43115](#)).
- d. Ensure that data entries and/or stamp impressions provide direct traceability to the individual applying the stamp or making the data entry ([Requirement 43116](#)).

2.4.5.3 Where product assurance accomplishment is attested by application of stamps to inspected supplies, the stamp shall not be applied in a manner prohibited by drawings

or specifications or which may degrade the quality of the product ([Requirement 43117](#)).

2.4.6 Product assurance actions shall be performed at subcontractor locations only where necessary to ensure that the contracted organization maintains effective oversight of subcontractors or to ensure compliance with critical product attributes (see paragraph 8.3.f) ( [Requirement 43118](#)).

2.4.7 Product assurance actions shall be performed by persons properly qualified and trained concerning the quality assurance technique being practiced and the specific product or processes for which assurance is being provided ([Requirement 43119](#)).

2.4.8 The control of monitoring and measuring devices used to perform product assurance actions shall comply with the same/applicable requirements invoked upon the contractor ([Requirement 43120](#)).

2.4.9 Product assurance actions performed on a sampling basis, for which there is a measurable population of items, shall be performed using statistically valid sampling plans to achieve prescribed confidence level objectives ([Requirement 43121](#)).

## 2.5 Quality System Evaluation

2.5.1 The contractor's quality system shall be reviewed to ensure compliance with invoked quality program requirements, including internally developed procedures. ([Requirement 43123](#)). Quality system evaluation may be conducted as a single audit or as a combination of discrete audits.

2.5.1.1 Quality system evaluation of prime contractors shall be conducted by NASA Centers, delegated agents, or NASA support contractors (Requirement XXXXX). Evaluation may be limited in scope in circumstances where the prime contractor is certified by an accredited SAE AS9100 Certification Body and where quality data analysis indicates acceptable risk.

2.5.1.2 Quality system evaluation of contractors other than prime contractors shall be conducted by NASA Centers, delegated agents, NASA support contractors, or, for cases where quality data analysis indicates acceptable risk, by accredited Certification Bodies (Requirement XXXXX).

*Note: "Prime contractor" is defined herein as an organization under direct NASA contract that supplies an integrated platform (e.g., aircraft, spacecraft) or a major system/equipment for integration into a NASA platform.*

2.5.2 The frequency of quality system audits shall be based on the contracted organization's quality history, but no less than once every three years ([Requirement 43125](#)).

2.5.3 The following quality system elements shall be reviewed where applicable and where invoked upon the contractor ([Requirement 43126](#)):

- a. Control of documents.
- b. Control of records.
- c. Configuration management.

- d. Personnel training, qualifications, and competence.
- e. Design and development control.
- f. Purchasing: Supplier evaluation/selection; purchasing information and flow-down of technical/quality requirements; verification of purchased product.
- g. Production control and process control.
- h. Product identification, traceability, and identification of inspection/test status.
- i. Preservation of product and foreign object prevention, detection, and removal.
- j. Calibration and control of monitoring, measuring, and test devices.
- k. Monitoring and measurement: Internal audit; monitoring and measurement of processes; monitoring and measurement of product.
- l. Control of nonconforming product.
- m. Quality data analysis/trending.
- n. Corrective action.
- o. Control of Government Furnished Property.
- p. Other quality program elements considered to represent unacceptable risk.

2.5.4 Quality system audits shall be performed and documented following written audit attributes, such as provided in AS9101, Quality Management Systems Assessment ( [Requirement 43143](#)).

2.5.5 Quality system audit attribute selection shall be based on the importance of the attribute toward achieving product conformity ([Requirement 43144](#)).

2.5.6 Quality system auditing shall include product sampling, where applicable, to validate quality system effectiveness ([Requirement 43145](#)).

2.5.6.1 Product sampling shall be based on the criticality, complexity, and maturity of the product, personnel safety considerations, and the supplier's past quality performance related to the product ([Requirement 43146](#)).

## 2.6 Quality Data Analysis

2.6.1 Contractor quality data shall be collected and analyzed to identify problem areas (e.g., projects, products, processes, operations, organizations), common deficiency causes, quality trends, defect anomalies, and process variations ( [Requirement 43148](#)).

2.6.2 Sources of data shall include contractor-generated metrics, NASA-identified nonconformances, post-delivery quality escapes, and quality data reported by delegated parties (e.g., DCMA, quality assurance support contractors, and accredited quality system registrars) ([Requirement 43149](#)).

2.6.3 Data shall be evaluated at established periodic intervals for the purpose of:

- a. Adjusting the frequency and content of customer oversight actions, including allocation of quality assurance personnel resources ( [Requirement 43151](#)).

- b. Providing supporting rationale for acceptance/rejection of the contractor's quality system and/or written procedures ( [Requirement 43152](#)).
- c. Initiating corrective action based on identification of systemic problems and trends ( [Requirement 43153](#)).
- d. Sharing analysis with the contractor to identify quality system trends and areas of weakness ( [Requirement 43154](#)).

## 2.7 Nonconformance Reporting and Corrective/Preventive Action

2.7.1 Government-identified nonconformances shall be documented and reported to the contractor for performance of corrective and preventive actions ( [Requirement 43156](#)).

2.7.2 Corrective action requests shall be elevated to the appropriate level of contractor management based on problem criticality, recurrence, and/or nonresponsiveness ( [Requirement 43157](#)).

2.7.3 Corrective action requests shall require identification of ( [Requirement 43158](#)):

- a. The root cause(s) for occurrence of the nonconformance.
- b. The scope of the nonconformance (i.e, total population of nonconforming items based on the identified root cause(s)).
- c. Remedial corrective actions taken concerning the product(s) found to be nonconforming.
- d. Measures taken/planned to prevent recurrence of the nonconformity.

2.7.4 Government follow-up shall be performed to ensure effective accomplishment of contractor corrective/preventive actions ( [Requirement 43163 2.7.4\(1\)](#)). Government follow-up may consist of first hand observations or review of verifiable contractor submitted documentation.

2.7.5 Government identified nonconformances and corrective action reports shall be entered into an electronic nonconformance reporting and corrective action tracking system and, as appropriate for source evaluation/selection purposes, a past performance information management system ( [Requirement 43165](#)).

## 2.8 Final Acceptance

2.8.1 Final acceptance constitutes acknowledgement that the supplies or services conform with applicable contract quality and quantity requirements, except where acceptance of nonconforming supplies is determined to be in the Government's interest (see FAR Section 46.407 and Subpart 46.5) or where provided for by other terms and conditions of the contract. The Government shall formally accept delivery of product or services based on performance of the following actions:

- a. Final product inspection ( [Requirement 43168](#)).
- b. Validation that there are no outstanding corrective actions resulting from contracting activity or contractor-identified nonconformances affecting acceptability of product ( [Requirement 43169](#)).



c. Validation that there are no outstanding engineering departures/waivers/deviations impacting acceptability of product and that all applicable engineering departures/waivers/deviations have been approved by the proper technical authority ([Requirement 43170](#)).

d. Validation that all required GMIPs have been accomplished ([Requirement 43171](#)).

2.8.2 Performance of final acceptance is an inherently Governmental function which is the responsibility of the NASA contracting officer or his/her Government delegate. Performance of final acceptance shall not be delegated to a non-Governmental entity ([Requirement 43172](#)).

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